

MINISTRY OF HEALTH

NATIONAL HEALTH SERVICE ACT, 1946

Report
by the Government Actuary
on the
National Health Service
Superannuation Scheme
1948-1955



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NATIONAL HEALTH SERVICE ACT, 1946

REPORT BY THE GOVERNMENT ACTUARY

*To: The Rt. Hon. Derek Walker-Smith, T.D., Q.C., M.P.,
Minister of Health.*

Sir,

I have the honour to submit my report on the first actuarial investigation of the National Health Service Superannuation Scheme, completed in accordance with the terms of Regulation 62 (1) of the National Health Service (Superannuation) Regulations, 1955, made by the Minister of Health in exercise of the powers conferred on him by Section 67 (1) of the National Health Service Act, 1946.

INTRODUCTION

1. The Scheme came into full effect from 5th July, 1948—although applying to a few staff from 12th August, 1947—and this report therefore covers the working of the Scheme for a period of six-and-three-quarter years up to 31st March, 1955, the date as at which the investigation was made. The purpose of the investigation is indicated by the terms of Regulation 62 (1), which runs as follows :—

“ 62.—(1) The Minister shall keep an account in such form and prepared in such manner as the Treasury may approve of all revenue received and expenditure incurred by the Minister under these regulations, and as at the thirty-first day of March, 1955, and at the expiration of every subsequent period of seven years, there shall be an actuarial investigation by the Government Actuary of the assets and liabilities of the Minister in respect of the benefits provided by the Minister under regulations made under subsection (1) of section 67 of the Act, to determine what adjustments (if any) are needed to maintain a balance between the said assets and liabilities ”.

2. The Scheme is compulsory and the members comprise all employees of the Health Service over the age of 18 whose duties are wholly or mainly administrative, professional or clerical, as well as medical and dental practitioners and part-time specialists. Other whole-time employees over age 18, such as manual workers, are required to complete two years' service before being admitted. The numbers involved are considerable and at the valuation date about 322,000 persons serving under the Health Service were superannuable under the Regulations. It is convenient to use the term “ Central Scheme ” to refer to the scheme of benefits and contributions set up under the Regulations, and applying to the great majority of those engaged in the

Health Service, in order to distinguish it from the various superannuation arrangements which continue to apply to certain employees, referred to as "optants", who elected to remain subject to their former conditions. Nearly 25,000 contributors, or about $7\frac{1}{2}$ per cent of the total at the valuation date were optants; the proportion will gradually diminish as these persons retire (or leave the Scheme for other reasons) and are replaced by new entrants.

BENEFITS AND CONTRIBUTIONS

3. The main benefits payable under the Scheme set up under the Regulations, to members other than medical or dental practitioners, are based on final average salary, i.e. the average salary received over the last three years of service. They are as follows:

Retirement pension. A pension of $1/80$ th of final average salary for each year of service is payable on retirement after a fixed age (60 for the main groups of members) or on breakdown in health at some earlier age.

Retirement lump sum. If a widow's pension may become payable at a later date the lump sum benefit on retirement is equal to one year's pension payments. If no widow's pension may be payable the lump sum benefit represents three years' pension payments.

Widow's pension. This is payable on the death of an employee either before or after his retirement and is usually equal to one-third of the pension the employee was receiving or would have received had he retired immediately before his death.

In addition there are various minor benefits such as death gratuities and short service gratuities; employees leaving the Scheme when not entitled to any other benefit receive a return of their own contributions with interest.

4. The standard benefits described in paragraph 3 are modified to adapt them to the special circumstances of certain groups. The level of pensionable remuneration of a medical or dental practitioner, for example, tends to fall in the later years of service and pension benefits related to final salary would be unsatisfactory. Their main benefits are, therefore, based on total earnings throughout service; the yearly pension equals $1\frac{1}{2}$ per cent of total pensionable remuneration, while the lump sum represents either $1\frac{1}{2}$ per cent or $4\frac{1}{2}$ per cent of the same total according to the position as regards widow's pension. There are also special superannuation provisions for mental health officers, who are described as those devoting substantially the whole of their time to the care or treatment of mental patients or defectives. The need for special arrangements for such officers had been recognised in the scale of benefits under the Asylums Officers' Superannuation Act, 1909, and in the Health Service Scheme it was provided that their minimum retirement age should be 55 and that each year of service in excess of twenty should count as two years for benefit purposes. Women who are nurses, physiotherapists, midwives or health visitors are also allowed to retire at age 55.

5. Because of the overlap with National Insurance benefits the retirement pension of an entrant to the Scheme after 5th July, 1948, is reduced by

£1 14s. 0d. per annum for each year of contributory service and an equivalent reduction is made in the yearly contribution. Those brought into the Scheme at its inception had the option of paying full contributions and receiving full benefits or of paying the same (reduced) contributions as new entrants. If they chose the second alternative, the reduction in their retirement pension was actuarially equivalent to the abatement of contribution and was therefore dependent on the age attained on 5th July, 1948.

6. The contributions payable by employees are 5 per cent of remuneration for manual workers and 6 per cent for all other groups, the corresponding employers' contributions being 6 per cent and 8 per cent of remuneration respectively. For those coming under the modification arrangements described in paragraph 5 the contributions of employees and employers are each reduced by 1s. 2d. a week for a man and 1s. 3d. a week for a woman (unless she is a nurse, physiotherapist, midwife, health visitor or mental health officer, for whom the reduction is 1s. 2d. a week). Medical and dental practitioners, being self-employed persons, receive the benefit of the full reduction.

OPTANTS AND OTHER SPECIAL GROUPS

7. Persons who elected to remain subject to the conditions of their former schemes fall into the following main groups:

- (i) those subject to the conditions of statutory schemes:
 - (a) Asylums Officers' Superannuation Act, 1909,
 - (b) Local Government Superannuation Act, 1937,
 - (c) the Superannuation Acts of various (individual) Local Authorities,
 - (d) the Superannuation Acts (civil servants) ;
- (ii) those subject to non-statutory pension schemes, including schemes operated by means of insurance policies such as those of the Federated Superannuation Scheme for Nurses and Hospital Officers, or the Federated Superannuation System for Universities ;
- (iii) doctors and dentists continuing their individual policy arrangements.

These persons doubtless elected to retain their former pension rights because they considered them to be more favourable than the provisions of the Central Scheme. Under the 1909 Asylums Officers' Act, for instance, the employee's rate of contribution was only 2½ or 3 per cent of salary or wages, whilst former civil servants and members of other non-contributory schemes paid no contribution at all. The retention of such rights imposed a considerable financial burden on the National Health Service Superannuation Scheme, and in order to determine whether or not the Central Scheme is paying its way, it was necessary to examine separately the position of the optants and to arrange for the accounts to be subdivided accordingly.

8. There is a group of persons who receive supplementary payments under Regulation 46 of the Scheme ; these are transferred officers who on 5th July, 1948, had expectations of benefits other than those arising from rights under

formal superannuation schemes. The expenditure needs to be shown separately in the Account of the Scheme, but there is of course no income to set against it.

9. Pensions already in payment in 1948 to employees of the former voluntary hospitals were not in general covered by the Regulations; but under section 6 (6) of the National Health Service Act, 1946, the Minister was made responsible for paying them, and up to March, 1955, nearly £1½ millions had been expended in such pensions.

Provision was made under the Scheme for the admission of staffs of independent hospitals provided that their inclusion did not result in any charge on the Exchequer. A few hospitals have taken advantage of the arrangements but the total staff involved on 31st March, 1955, was less than 50.

STATISTICS

Numbers of contributors

10. The following statement summarises the membership of the Scheme at the valuation date. More detailed information about the different groups of optants is given in Appendix I.

Numbers of contributors on 31st March, 1955

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Central Scheme			
(i) Administrative clerical etc. officers and hospital medical and dental officers	33,587	32,158	65,745
(ii) Mental health officers	12,471	13,596	26,067
(iii) Medical practitioners	21,683	2,352	24,035
(iv) Dental practitioners	8,225	386	8,611
(v) Nurses, physiotherapists, etc.	—	97,368	97,368
(vi) Manual workers:			
mental health	1,665	1,497	3,162
others	36,670	35,963	72,633
	<u>114,301</u>	<u>183,320</u>	<u>297,621</u>
Optants			
(i) Statutory pension schemes	11,063	3,650	14,713
(ii) Non-statutory pension schemes	1,974	6,573	8,547
(iii) Practitioners maintaining individual insurance policies	1,316	46	1,362
	<u>14,353</u>	<u>10,269</u>	<u>24,622</u>
Totals, Central Scheme and Optants	<u>128,654</u>	<u>193,589</u>	<u>322,243</u>

Cold storage benefits, etc.

11. The Scheme makes provision for those who have breaks in their service of not more than twelve months' duration to retain for that period the right to return to contributing service. On the valuation date 2,136 men and 7,523 women had their membership of the Scheme in suspense on

this basis. In addition there were 1,811 men and women who had left the Scheme for "approved service" with another employer and who retained an interest in the Scheme in respect of their contributory service and might, on reaching pension age, claim a pension based on their level of salary on leaving. The benefits of these persons are referred to as "cold storage" benefits and in the course of time a considerable increase in the number of such cases must be expected.

Changes in membership from 5th July, 1948, to 31st March, 1955

12. The following summary of the movement in membership gives evidence of a considerable turnover of staff. This is particularly marked in the case of women; the number of withdrawals from service in the 6½ years in which the Scheme had been in operation amounted to 242,009 compared with a total membership on the valuation date of 183,320 :—

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Number of members of Central Scheme at 5th July, 1948	72,449	118,015	190,464
New entrants and transfers from other schemes	120,453	342,702	463,155
	192,902	460,717	653,619
Deaths	3,529	1,278	4,807
Retirements:			
ill-health	1,341	1,524	2,865
age	5,402	4,890	10,292
Withdrawals	60,589	242,009	302,598
Membership in suspense	2,989	8,425	11,414
Transfers to other schemes	4,751	19,271	24,022
	78,601	277,397	355,998
Number of members of Central Scheme at 31st March, 1955	114,301	183,320	297,621

Note: "Membership in suspense" includes those who have left the service for less than twelve months and still retain an interest in the Scheme, and also those who have left for "approved service" with other employers and are entitled to "cold storage" benefits.

Information about optants who had left the Health Service before 31st March, 1955, was not available for the purposes of the investigation. Many who had elected to retain their former benefits rescinded this decision when given a further opportunity in 1950 to enter the Central Scheme. This accounts for a large part of the increase in membership of the Central Scheme between 1948 and 1955.

Salaries at the valuation date

13. The following table shows the average salary or remuneration per head for the different groups of persons in the Scheme. Apart from medical practitioners and hospital medical officers most contributors benefited from pay awards in 1955. Some awards had an effective date of operation after the valuation date (in some cases as late as 1st July, 1955) and dental practitioners had a 10 per cent cut restored as from 1st May, 1955. It would have been unrealistic not to take account of these awards in the investigation, and the averages shown in the table represent salaries at 31st March, 1955.

adjusted for the 1955 pay additions and, in the case of women, to make full provision for future pay additions agreed as part of the policy for granting equal pay.

		<i>Average annual salary per head</i>	
		<i>Men</i>	<i>Women</i>
		£	£
Central Scheme			
(i) Administrative, clerical etc. officers including hospital medical and dental officers		722	473
(ii) Mental health officers		586	457
(iii) Medical practitioners		2,057	1,236
(iv) Dental practitioners		1,665	1,129
(v) Nurses, physiotherapists, health visitors, etc.		—	364
(vi) Manual workers:			
(a) mental health		449	343
(b) others		442	314
Optants			
(i) Statutory pension schemes		587	578
(ii) Non-statutory pension schemes		836	628
(iii) Practitioners maintaining individual insurance policies		2,083	1,435

The salary roll amounted to approximately £107 millions a year for men and £72 millions for women subject to the Central Scheme, and approximately £11 millions for men optants and £6 millions for women optants, giving a total of £196 millions a year.

Pensions in payment at the valuation date

14. Pensions in payment on 31st March, 1955, were as follows :—

<i>Class of pension</i>	<i>Men</i>		<i>Women</i>		<i>Total</i>	
	<i>Numbers</i>	<i>Amount of pension</i>	<i>Numbers</i>	<i>Amount of pension</i>	<i>Numbers</i>	<i>Amount of pension</i>
		£000's		£000's		£000's
Central Scheme	4,339	848	4,158	495	8,497	1,343
Optants	2,271	395	1,447	208	3,718	603
Supplementary	512	73	942	95	1,454	168
Widows' pensions:						
(a) Central Scheme	—	—	1,139	70	1,139	70
(b) Optants	—	—	10	1	10	1

Notes: (i) Persons receiving supplementary pensions (see paragraph 8) are for the most part also in receipt of ordinary pensions under the Scheme;

(ii) The figures include pensions amounting to £57,000 a year which were temporarily suspended on the valuation date because of re-employment.

Growth of pension roll, 5th July, 1948, to 31st March, 1955

15. Information regarding changes in the pensioner population was available only for pensions payable under the Central Scheme; the numbers are as follows:—

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Pensioners at 5th July, 1948.	100	38	138
New pensioners	4,699	4,342	9,041
Deaths and other terminations	4,799	4,380	9,179
Pensioners at 31st March, 1955	4,339	4,158	8,497

The number of pensions in payment must be expected to grow rapidly for many years.

THE ACCOUNT

16. Regulation 62 (1) states that the Account shall be "in such form and prepared in such manner as the Treasury may approve". In 1947, when the financial basis of the Scheme was being determined, it was decided by the Treasury that interest at the rate of $2\frac{1}{2}$ per cent per annum should be credited each year on the mean balance in the Account; accordingly, this rate of interest was used in discounting the value of future benefits and contributions for the purpose of assessing the rates of contribution for the Scheme. When the present investigation was due to be undertaken conditions were very different from those prevailing in 1947, and it was decided to raise the rate of interest to be credited to the Account to $3\frac{1}{2}$ per cent per annum as from 1st April, 1955.

17. Separate accounts are maintained for the Central Scheme and for the subsidiary schemes subdivided into four groups. A consolidated revenue account giving details for the Central Scheme and each of the four groups is set out in Appendix II to this report. The following combined statement shows the main items of revenue and expenditure contributing to a balance of approximately £150 millions in the combined Account at the valuation date.

Consolidated Revenue Account for Central Scheme and optants combined for the period 12th August, 1947 to 31st March, 1955

<i>Revenue</i>	<i>£000's</i>	<i>Expenditure</i>	<i>£000's</i>
Employees' contributions	55,696	Pensions	6,025
Employers' contributions	76,087	Lump sum allowances and short service gratuities	4,515
Bulk transfer values and transferred funds	30,423	Death gratuities	1,244
Individual transfer values	5,680	Widows' and dependants' pensions	173
Other receipts	415	Returns of contributions	8,595
Interest	13,233	Individual transfer values	4,298
		Insurance premiums, etc.	7,051
		Balance on 31st March, 1955	149,633
Total	181,534		181,534

18. Some comment is desirable on the several entries for transfer values in the Account. The Scheme provides that officers transferring to or from the Health Service under certain approved arrangements may carry with them accrued pension rights. The financial adjustments for the interchange arrangements are made by means of a system of transfer values. Owing to the large number of initial entrants with existing superannuation rights, there was an excess of transfer value receipts over payments of about £32 millions during the period up to March, 1955. Provision was made for transfer values from local authorities to be paid over a period of years if desired, and at the valuation date the outstanding instalments amounted in aggregate to approximately £22 millions. A net increase in the balance in the Account because of transfer values will continue while these instalments are being paid.

19. Although most of the items of revenue and expenditure represent actual cash payments the accounts of the Scheme are notional in the sense that the interest credited and the balance in the Account at any time are book-keeping entries and no invested assets exist corresponding to the credit balance of £149,633,000 shown above.

This in no way invalidates the Account or impairs its usefulness. The Government has agreed to credit interest at the rate of $3\frac{1}{2}$ per cent per annum on the balance in the Account. The contributors are therefore in the same position as members of an employer's superannuation fund in which the employer credits the fund with interest at a fixed rate of $3\frac{1}{2}$ per cent per annum. The investigation into the financial position of the Scheme has the same implications.

20. A number of pensions payable under the Regulations are supplemented by payments authorised by the Pensions Increase Acts. These increases are, however, outside the scope of the Regulations and no account was taken of them in the investigation.

EXPERIENCE AND VALUATION BASIS

General

21. As the superannuation scheme was set up at the same time as the Health Service in its present form, no past experience was available for the calculation of rates of contribution and a suitable basis had to be derived from the experience of other comparable schemes. The present actuarial investigation is, therefore, particularly important because it provides the first opportunity of examining the statistics arising from the administration of the Scheme and of testing the appropriateness of the basis upon which its finances were established. Where changes are found necessary the statistics enable a suitable basis for future use to be determined.

22. The 300,000 persons covered by the Scheme fall into a number of groups with distinctive characteristics which affect the value of superannuation benefits. It was necessary, therefore, to examine the experience and to obtain valuation data for each group separately and, although requirements were kept to a minimum, over 300 tables of statistical information had to be compiled. Wherever possible, sampling methods were used in the extraction of these data. The results of the examination of the experience from July, 1948, are summarised briefly in the following paragraphs.

Mortality of pensioners

23. Apart from 138 persons who were drawing pensions in July, 1948, the experience was limited to those retiring after that date with sufficient service to qualify for a pension. It was a relatively small experience, and it was therefore necessary to amalgamate the data for the different groups and in addition to make use of the experience of those persons who, although not covered by the Regulations, were paid pensions by the Minister under section 6 (6) of the 1946 Act. This additional information was specially extracted from the Ministry's records, and examination showed that the experience was consistent with that of Scheme pensioners. The combined experience comprised 593 deaths of men and 433 deaths of women. Although not large enough to form a basis for the construction of new tables of mortality rates, it enabled suitable adjustments of standard annuitant mortality tables to be made for the purpose of the investigation.

24. There was no evidence from the limited experience available to show that pensioners retiring at the usual ages experienced different rates of mortality in the years shortly after retirement from those pensioners of the same age who had been drawing pension for some years. Aggregate rates of mortality were therefore used for the investigation, i.e. rates applicable to all pensioners of the same age who have retired on grounds of age whatever their age at retirement. The rates, which are set out in Appendix III (a), are considerably lighter than those assumed in 1948 for the purpose of assessing the rates of contribution. This was to be expected having regard to the improvement in vitality which is a feature of the experience of other pension funds as well as of the annuity funds of life offices.

25. The experience of those retiring through ill-health indicated heavy mortality in the years immediately after retirement. As the period since retirement increased, however, the mortality tended to approximate more closely to that of pensioners who had retired on grounds of age. The rates adopted are tabulated in Appendix III (a).

26. In valuing pensions in payment at the valuation date the rates shown in Appendix III (a) were used without adjustment. In valuing the future pensions of officers now in service, and in determining the appropriate rates of contribution for officers entering the Health Service in future, allowance was made for future improvement in mortality by reference to the adjustments for this factor adopted in the recently published tables for Life Offices Annuitants.

27. In valuing the liabilities for practitioners, and in assessing the rate of contribution appropriate for practitioners entering the service, the above rates were suitably modified to allow for the relatively heavy mortality at ages over 50 experienced by doctors (see paragraph 28 (ii)).

Mortality in service

28. (i) *Men and women other than practitioners*

An investigation of the mortality experience of the separate groups showed that the differences did not justify the adoption of different bases, except for men and for women. The combined experience for men comprised 2,167 deaths and for women 1,244 deaths, and enabled suitable rates of mortality to be determined for valuation purposes. The

rates, especially in the case of women, were considerably lighter than those used in assessing the contributions in 1948. The rates adopted are shown in Appendices III (b) and (c).

(ii) *Practitioners—medical and dental*

For practitioners a suitable table of mortality rates was prepared with the aid of the experience, which included 1,396 deaths. The mortality was lighter than for the other male groups up to age 50 but above that age was heavier, the excess between ages 60 and 65 being more than 50 per cent. Only one practitioner in twelve was a woman, and because their experience was not sufficiently extensive to determine mortality rates they were grouped with the men for the purpose of the investigation. The rates adopted for practitioners are shown in Appendix III (b).

Rates of retirement

29. (i) *Ill-health retirement*

The incidence of ill-health retirement was investigated separately for each group and appropriate rates of retirement were prepared. For some of the smaller groups, e.g. manual workers who are classified as mental health officers, the data were too scanty to provide a basis for separate rates and it was necessary to combine them with another group. The rates adopted are shown in Appendices III (b) and (c). Apart from appreciably lighter rates found necessary for mental health officers and practitioners, the rates are not very different from those assumed in 1948, which were based largely on the experience of Local Government Officers and Asylums Officers.

(ii) *Retirement on grounds of age*

The past experience of the Scheme in regard to retirement on grounds of age is no guide to the future because in the period up to 1955 very few officers had completed enough years of service to qualify for pension. The rates adopted are accordingly based on the experience of other comparable pension schemes appropriately modified to allow for special conditions of the Health Service Scheme, such as the retirement of nurses and mental health officers on age grounds at 55. The rates adopted are set out in Appendices III (b) and (c).

Withdrawal rates

30. (i) *Officers other than practitioners*

The numbers of persons withdrawing from the service at all ages up to the ages for retirement were unusually large, especially among manual workers. It seems improbable that when the Scheme has settled down the turnover of staff will continue at such a high level and there was some evidence of a falling-off in the wastage rates in the later years of the valuation period. A person resigning from the service receives only the return of his own contributions with interest and it is dangerous to over-estimate the extent to which the Account is likely to benefit in the future from the retention of the corresponding employers' contributions. In the circumstances the rates of withdrawal adopted were based largely on the experience of local government officers; they are set out in Appendices III (b) and (c).

(ii) Practitioners

In 1948, in estimating the appropriate rate of contribution for practitioners, it was assumed that a practitioner would remain in the Scheme until his death or until he received a pension. The experience of the Scheme confirmed that this assumption was reasonable and for the purpose of the present investigation it was not considered necessary to take account of any withdrawal rate for practitioners.

Miscellaneous valuation factors

31. A variety of other factors, such as the proportions married at various ages and the average disparity in age between a husband and wife, enter into the evaluation of the benefits of the Scheme. These were assessed as far as possible by reference to the experience, supplemented as necessary by census and other pension fund data.

Rate of progression of average salary with age

32. The rate of progression of average pensionable salary or remuneration with age is an important factor in determining how the value of benefits compares with the value of the contributions payable; it may have a considerable effect both on the valuation result and on the rate of contribution estimated to be appropriate for new entrants to the Scheme. The assumptions made in 1948 as to salary progression were necessarily provisional because little information was available. For the present investigation full particulars were supplied of salaries in payment on 31st March, 1955, and of salary scales in force on that date. Information was also given about the effect of salary awards in 1955 which became operative at various dates up to and including 1st July, as well as about the effect of granting equal pay to women. From the material thus obtained, appropriate rates of salary progression for the different groups of persons in the Health Service were calculated. These salary scales, which make allowance for the 1955 salary awards and the full implementation of equal pay, are set out in Appendices IV (a) and (b). Most of them show a somewhat steeper progression than was assumed in 1948, although the general pattern is similar except for medical and dental practitioners. In 1948 the probable range and age incidence of future remuneration of doctors and dentists were more conjectural than the salary progressions likely to apply for other groups. The information available in 1955 showed that, although the assumption that remuneration would rise to a peak and fall away in the later years of service was correct, the peak occurred at an earlier age than had been expected—on average at age 48 for doctors and 42 for dentists—and the subsequent fall was more marked. For all groups the scales adopted make no allowance for any salary revision that may have occurred subsequent to 1955 or for any future revisions.

The rate of interest

33. For reasons stated in paragraph 16 a rate of interest of $3\frac{1}{2}$ per cent has been used in discounting future benefits and contributions for the purpose of determining the capital value of the assets and liabilities of the Scheme and in estimating the rates of contribution appropriate for new entrants.

VALUATION BALANCE SHEET

34. The financial position of the Scheme on the valuation date is set out in the following consolidated valuation balance sheet which comprises all benefits payable under the Regulations. It shows a deficiency of about £80 millions as at 31st March, 1955, equal to nearly 15 per cent of the aggregate value of the liabilities:—

Valuation Balance Sheet as at 31st March, 1955

<i>Liabilities</i>	<i>£000's</i>	<i>Assets</i>	<i>£000's</i>
Present value of:		Present value of:	
Existing pensions (including widows' and dependants' pensions)	26,036	Future contributions by:	
Contingent pensions to widows of existing pensioners	952	Members	127,844
Present value of future awards of:		Employing authorities	175,180
Pensions to members (including injury allowances)	389,595	Outstanding payments in respect of transfer values etc.	13,990
Lump sum payments (including short service gratuities)	51,874	Other outstanding revenue	727
Death gratuities	8,684	Balance in the Superannuation Account at 31st March, 1955	149,633
Widows' pensions	46,476		
Refunds of contributions etc.	10,306		
Present value of:			
Contributory payments to other superannuation arrangements			
(i) F.S.S.N. etc. under Reg. 45	9,687		
(ii) Practitioners' insurance policies under Reg. 76	2,436		
Outstanding expenditure	810	Deficiency	79,482
	<u>546,856</u>		<u>546,856</u>

35. Separate valuation balance sheets are set out in Appendix V for the following subdivisions:

- (i) the Central Scheme
- (ii) persons who elected to retain benefits under statutory schemes
- (iii) persons who elected to retain benefits under non-statutory schemes
- (iv) practitioners maintaining insurance policies under Regulation 76
- (v) supplementary payments under Regulation 46.

The valuation necessarily omits the amount of any liability for future expenditure on account of 3,686 persons who were in service on the valuation date and who may, in due course, become entitled to supplementary pensions. It will be seen from Appendix V that the deficiency under the Central Scheme was £46 millions out of a total of about £80 millions, or not much more than one-half of the total deficiency. The relatively heavy burden placed on the Scheme by persons who elected to retain benefits under other schemes is apparent from the fact that whereas the average deficiency per head in group (i) was £155, the corresponding averages for groups (ii) and (iii) were £1,643 and £314 respectively.

CAUSES OF THE DEFICIENCY

36. The deficiency in the Scheme may be considered in two parts, first the "initial deficiency" arising at the inception of the Scheme and secondly the loss on working since 1948. The main factors which contributed to the initial deficiency were:

- (i) the entry into the Scheme in July, 1948, of persons at ages above the normal ages of entry to the Health Service. The rate of contribution required to support the benefits increases with the age at entry of the contributor but the standard rate of contribution is payable in all cases, thus creating a substantial liability at the outset of the Scheme;
- (ii) the fact that persons retaining rights under existing schemes often pay low rates of contribution which make the total including the employer's contribution—fixed under the Regulations at 8 per cent of salary (6 per cent for manual workers)—inadequate even at the youngest ages (see paragraph 7). For schemes such as the Federated Superannuation Scheme for Nurses and Hospital Officers the joint contributions of 13 per cent of pensionable remuneration are insufficient to meet the requisite premiums of 15 per cent set out in the assurance policies;
- (iii) the concession to local authorities, allowing them to pay transfer values in respect of employees formerly subject to the Asylums Officers' Superannuation Act, 1909, over a period of years (in some cases 40 years) without adding the sums necessary to allow for interest—giving rise to a loss of £12½ millions;
- (iv) deficiencies in certain pension funds taken over in 1948.

37. In the course of the Scheme's working since 1948 the deficiency has increased as a result of the interaction of a number of items of profit and loss.

The main factors favourable to the Scheme have been:

- (i) the assumption of a rate of interest of 3½ per cent per annum for the purpose of discounting future payments of benefits and future contributions, instead of the rate of 2½ per cent assumed in 1948;
- (ii) the withdrawal from the Scheme (with entitlement only to a return of their own contributions) of greater numbers than had been assumed in assessing the rate of contribution. In such cases the benefit of the employers' past contributions accrues to the Account;
- (iii) a tendency for postponement of retirement (on grounds of age) to higher ages than those assumed in 1948;
- (iv) the fact that in the case of new entrants to the Scheme the reduction in contributions and pension benefits to take account of the National Insurance retirement pensions is at the same rate irrespective of age at entry. For the older ages this results in a net profit to the Account.

The main items of loss arise from :

- (i) increases in the general level of salaries since 5th July, 1948. Rates of contribution are calculated so as to be sufficient to meet the cost of benefits on the basis of an assumed progression of average salary with age. When an increase occurs in the general level of salaries the value of future contributions is changed in roughly the same proportion as the value of future benefits, but there is a net loss to the Scheme due to past contributions having been paid on lower levels of salary. The weight of this factor is limited in the present valuation because the average period of past service, even allowing for those officers whose service with a previous employer counts for benefit, is still comparatively short. The effect of any upward revisions of salary in the future will become more marked as past service becomes relatively more important ;
- (ii) entrants into the Scheme at ages above the normal ages for entry to the Health Service, paying the standard rates of contribution ;
- (iii) the valuation assumption of lighter mortality, both for officers and for pensioners, than was assumed in calculating the rates of contribution in 1948 ;
- (iv) the fact that the initial deficiency was not matched by corresponding assets—or contributions to create such assets—so that no interest was credited on this amount during the seven years ;
- (v) the assumption of a steeper rate of progression of average salary with age than that used in calculating the rates of contribution in 1948 ;
- (vi) the absence of any income to meet the cost of supplementary payments—a loss of nearly £2½ millions ;
- (vii) the fact that no employers' contributions have been credited to the Account to compensate for the payment of 8 per cent of pensionable remuneration in the case of practitioners who are maintaining individual insurance policies (Reg. 76)—a loss of over £4 millions ;
- (viii) the concession allowing certain previous service to count as qualifying service.

Upward revisions of salary levels since 1948 increased the net liability for optants relatively more than that for members of the Central Scheme because of the longer duration of their past service counting for benefit purposes. This, together with the inadequacy of the contributions for optants, referred to in paragraph 36 (ii), largely explains why their average deficiency per head so greatly exceeds that for members of the Central Scheme.

38. A calculation of the initial deficiency at the outset of the Scheme could not be made as the necessary details relating to the staff in service on 5th July, 1948, were not available. Unfortunately, therefore, it cannot be said how much of the deficiency on the valuation date was the result of the initial deficiency and how much arose from the working of the Scheme subsequently. It is estimated, however, that about one-half of the total deficiency of about £80 millions was attributable to increases in salary levels since 1948.

RATES OF CONTRIBUTION FOR NEW ENTRANTS

39. On the revised actuarial basis adopted for the investigation (see paragraphs 23 to 33), calculations have been made to determine the rates of contribution that would be appropriate to support the benefits of the Central Scheme in the case of persons entering the Health Service at the normal ages. For this purpose contributors were considered in the same broad groupings as those adopted for assessing the rates of contribution in 1948, viz. officers and nurses (including those concerned with mental health); manual workers (including those concerned with mental health); medical practitioners; dental practitioners.

40. For the first two groups, namely 'officers and nurses' and 'manual workers' it was found that the allowance for greater longevity, the slightly steeper salary progression now assumed, and other changes made in the valuation basis had offset the effect of the increase in the rate of interest. For each of these groups taken as a whole—and without regard to the position in respect of the separate categories making up the group—the rates of contribution at present payable, viz. 14 per cent of salary for officers and nurses (6 per cent employee, 8 per cent employer) and 11 per cent for manual workers (5 per cent employee, 6 per cent employer) are found to be still appropriate to, but not more than adequate for, the benefits for a new entrant.

41. For medical practitioners the changes in the valuation basis had a similar general effect, except for the greater importance of the changes made in the "salary scales". As stated earlier in paragraph 32, allowance for a decline in pensionable remuneration in the middle and later years of working life, greater than was assumed in the calculations in 1948, was found to be required. In the result it was estimated that the rate of contribution for medical practitioners could be reduced by 2 per cent. In other words a rate of contribution of 12 per cent of pensionable remuneration is sufficient to support their benefits—in the case of an entrant at normal entry age—compared with the existing rate of 14 per cent. For dental practitioners a new entrant rate of contribution of 11 per cent is estimated to be sufficient, the decline in remuneration from a maximum in the middle years of service being more marked than for doctors.

CONCLUSION

42. In the terms of Regulation 62 (1) the purpose of the actuarial investigation is to determine "what adjustments (if any) are needed to maintain a balance between the said assets and liabilities". In considering this matter it must be noted that the deficiency of £80 millions brought out by the valuation is based on the assumption that the present rates of contribution continue unchanged; if the contributions of existing medical and dental practitioners were reduced to conform with the rates suggested in the preceding paragraph as appropriate for new entrants, the deficiency would be increased by £17·3 millions to £97 millions.

43. A first step before considering action to deal with the deficiency would be to arrange for the Account to be credited in future with the employer's

contribution of 8 per cent of pensionable remuneration in respect of practitioners who elected to maintain their individual insurance policies; or, alternatively, to cease charging these payments to the Account. Either of these courses, if adopted, would reduce the deficiency by the relatively small amount of £2.4 millions.

The deficiency is large in relation to the liabilities of the Scheme—no less than 15 per cent of the total liability, or 18 per cent if the contributions of practitioners were reduced as indicated in paragraph 41—and no easy measures are available to redress the balance between assets and liabilities. The present situation is due mainly to the grant of benefits at the outset to all members whatever their age at rates of contribution corresponding to normal age for entry to the various services, and to the effect on the value of future benefits of salary revisions. Nearly all existing members will receive an advantage in due course from one or both of these causes; it seems reasonable therefore that the deficiency should be reduced or liquidated by increasing the rates of contribution to be paid by and in respect of members. Discrimination between existing and new contributors would give rise to great difficulties, administrative and otherwise, and it would probably be necessary to impose an extra charge upon all. If this were done, the balance of the deficiency could be met by an additional contribution of 2 per cent of pensionable remuneration in respect of all contributors including new entrants, payable with effect from 1st April 1958, for about 37 years. If, however, the present contributions for medical practitioners and dental practitioners were—as a prior measure—reduced to 12 per cent and 11 per cent respectively, it would be necessary to increase the additional contribution to 2½ per cent in order to make good the deficiency within the same period.

SUMMARY

44. The present rates of contribution are estimated to be generally appropriate for entrants at the normal ages of entry to the Scheme, on the assumption that interest is credited to the Account at 3½ per cent per annum. In the case of medical and dental practitioners, however, these rates are on the high side and the contributions for new entrants might reasonably be reduced respectively to 12 per cent and 11 per cent of pensionable remuneration.

The valuation of the assets and liabilities of the Scheme, however, brings out a substantial deficiency, amounting to about £80 millions in relation to an aggregate capital liability of some £547 millions. This result is due partly to various liabilities imposed upon the Scheme at its inception and partly to the subsequent working of the Scheme up to the valuation date.

The principal factors contributing to the initial deficiency were the inadequacy of the rates of contribution for entrants to the Scheme in 1948 at ages above those which are normal for entry to the Health Service, the inadequacy of contributions for optants at all ages and the waiving of interest in respect of certain transfer values payable in instalments by local authorities. Since the Scheme started there have been considerable revisions of salary and these provide much the most important single factor producing a

deficiency on the working of the Scheme ; in addition, supplementary payments under Regulation 46 contributed £2½ millions to the deficiency and will give rise to further deficiencies.

If the contributions of all members and employers were to be increased with a view to restoring the balance between assets and liabilities it would be necessary to raise the joint contributions by an additional 2 per cent of salary or remuneration, and the increase would have to be maintained for between 35 and 40 years in order to liquidate the deficiency. If the normal contributions for existing practitioners were reduced to 12 per cent for medical and 11 per cent for dental practitioners, the equivalent additional contribution would be 2½ per cent.

The valuation result allows for the effect of the revisions of salary in 1955 and the subsequent increases to women on account of equal pay. Apart from these salary changes stability of salary scales after 1955 has been assumed ; further upward revisions of the general level of salaries would add to the deficiency in the Scheme by increasing future liabilities to a greater extent than future income.

I am, Sir,

Your obedient Servant,

GEORGE H. MADDEX

Government Actuary's Department,

London, S.W.1.

27th September, 1957.

APPENDIX I

Numbers of contributors on 31st March, 1955 who elected to retain rights corresponding to those enjoyed under their previous superannuation arrangements

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Statutory Optants			
Asylums Officers' Superannuation Act, 1909	7,163	691	7,854
Local Government Superannuation Act, 1937	1,344	1,798	3,142
London County Council Superannuation Scheme	1,920	913	2,833
Middlesex County Council Superannuation Scheme	160	54	214
Local Superannuation Acts, other than London County Council and Middlesex	42	88	130
Insurance Committee Officers' Superannuation Fund	2	11	13
Schemes approved by the Minister under Regulation 18 (3) (d) (v)	14	2	16
Superannuation Acts	135	41	176
Prison Officers Act, 1919	283	52	335
Total (statutory optants)	11,063	3,650	14,713
Non-statutory optants			
Policy schemes	1,573	6,331	7,904
Non-policy schemes	401	242	643
Total (non-statutory optants)	1,974	6,573	8,547
Practitioners maintaining individual insurance policies			
Medical	1,202	44	1,246
Dental	114	2	116
Total (practitioners maintaining policies)	1,316	46	1,362
Grand total (all optants)	14,353	10,269	24,622

APPENDIX II

Consolidated revenue accounts for the period 12th August, 1947 to 31st March, 1955

Amounts in £000's

	Central Scheme	Statutory optants (Reg. 43)	Non-statutory optants (Reg. 45)	Practitioners' insurance policies (Reg. 76)	Supplementary payments (Reg. 46)	Total
Revenue						
Employees' contributions	51,697	2,169	1,830	—	—	55,696
Employers' contributions	68,813	4,257	3,017	—	—	76,087
Bulk transfer values and funds transferred	17,083	13,340	—	—	—	30,423
Individual transfer values	5,607	73	—	—	—	5,680
Other revenue (surrender values of insurance policies and returns of employers' shares of premiums)	94	—	308	—	13	415
Interest (net) on mean balances	11,130	2,297	(Dr.) 30	(Dr.) 133	31	13,233
Debit balances at 31st March, 1955	—	—	465	1,712	579	2,756
	154,424	22,136	5,590	1,579	561	184,290
Expenditure						
Pensions (including injury allowances)	3,495	1,867	115	—	548	6,025
Retiring allowances (lump sums)	3,811	356	2	—	12	4,181
Short service gratuities	334	—	—	—	—	334
Death gratuities	1,046	196	1	—	1	1,244
Widows' pensions	172	—	—	—	—	172
Allocated pensions (dependants)	1	—	—	—	—	1
Refunds of contributions	8,262	333	—	—	—	8,595
Individual transfer values	3,931	367	—	—	—	4,298
Contributory payments to other superannuation arrangements	—	—	5,472	1,579	—	7,051
Credit balances at 31st March, 1955	133,372	19,017	—	—	—	152,389
	154,424	22,136	5,590	1,579	561	184,290

APPENDIX III (a)

Rates of mortality of pensioners (qx)

<i>Probability of death of ill-health pensioners</i>			<i>Probability of death of age pensioners</i>		
<i>(1) during the first three years after retirement</i>			<i>Age last birthday at beginning of year</i>	<i>Men</i>	<i>Women</i>
<i>Year of duration</i>	<i>Men</i>	<i>Women</i>			
0	·115	·050	55	·0122	·0063
			56	·0133	·0068
1	·065	·030	57	·0144	·0075
			58	·0157	·0082
2	·045	·020	59	·0171	·0090
			60	·0186	·0099
<i>(2) in the fourth and subsequent years after retirement</i>			61	·0202	·0108
			62	·0220	·0120
			63	·0240	·0132
			64	·0262	·0146
			65	·0285	·0161
			66	·0310	·0179
			67	·0338	·0198
			68	·0368	·0219
			69	·0400	·0243
			70	·0439	·0270
			71	·0484	·0300
			72	·0534	·0332
			73	·0588	·0369
			74	·0648	·0409
			75	·0712	·0454
			76	·0783	·0504
			77	·0860	·0558
			78	·0943	·0618
			79	·1033	·0684
			80	·1130	·0756
			81	·1234	·0835
			82	·1345	·0921
			83	·1463	·1014
			84	·1589	·1115
			85	·1723	·1224
			86	·1863	·1341
			87	·2010	·1467
			88	·2163	·1600
			89	·2322	·1742
			90	·2487	·1892
			91	·2655	·2049
			92	·2827	·2212
			93	·3002	·2382
			94	·3179	·2558
			95	·3356	·2737
			96	·3533	·2920
			97	·3708	·3105
			98	·3881	·3291
			99	·405	·348
			100	·423	·366
			101	·441	·386
			102	·460	·406
			103	·480	·428
			104	·502	·452

APPENDIX III (b)

MEN

Probabilities of death, withdrawal from service with refund of contributions and retirement with pension or other benefit in the year following the age stated

Age last birthday at beginning of year	Probability of death in service			Probability of withdrawal from service with refund of contributions		Probability of retirement from service with pension or other benefit		
	Groups A, B	Groups C, D	Groups E, F	Groups A, B	Groups C, D	Groups A, B	Groups C, D	Groups E, F
22	·0008	·0008	—	·0135	·0135	—	—	—
27	·0008	·0008	·00076	·0095	·0095	—	—	—
32	·0010	·0010	·00085	·0025	·0025	—	·0004	—
37	·0014	·0014	·0012	—	—	·0010	·0006	·0010
42	·0024	·0024	·0021	—	—	·0020	·0011	·0020
47	·0044	·0044	·0038	—	—	·0040	·0025	·0040
52	·0076	·0077	·0088	—	—	·0099	·0045	·0060
54	·0070	·0093	·0111	—	—	·5000	·0061	·0072
55	·0083	·0103	·0124	—	—	·4000	·0071	·0079
56	·0091	·0114	·0138	—	—	·4000	·0084	·0089
57	·0100	·0125	·0154	—	—	·4000	·0099	·0099
58	·0109	·0135	·0177	—	—	·4000	·0117	·0118
59	·0058	·0138	·0192	—	—	·9942	·3300	·1500
60		·0139	·0231		—		·2700	·0500
61		·0151	·0260		—		·2700	·0500
62		·0164	·0288		—		·2700	·0500
63		·0177	·0317		—		·2700	·0500
64		·0111	·0177		—		·9889	·9823

Notes:

(i) The groups are composed as follows:—

Group A—mental health officers (non-manual)

„ B—mental health officers (manual)

„ C—officers (administrative, executive, clerical, and hospital medical and technical officers)

„ D—manual workers (excluding mental health officers)

„ E—medical practitioners

„ F—dental practitioners

(ii) Retirement is assumed to be on grounds of age at age 55 and over for Groups A and B, and at age 60 and over for Groups C, D, E and F, and to be on grounds of ill-health under those ages.

(iii) No withdrawal rate was used for Groups E and F.

(iv) The probabilities at the terminal ages relate to only half a year.

APPENDIX III (c)

WOMEN

Probabilities of death, withdrawal from service with refund of contributions and retirement with pension or other benefit in the year following the age stated

Age last birthday at beginning of year	Probability of death in service		Probability of withdrawal from service with refund of contributions		Probability of retirement from service with pension or other benefit	
	Groups G, H, J	Groups K, L	Groups G, H, J	Groups K, L	Groups G, H, J	Groups K, L
22	·0003	·0003	·1180	·1180	—	—
27	·0005	·0005	·1280	·1280	—	—
32	·0007	·0007	·0720	·0720	·0005	—
37	·0010	·0010	·0120	·0120	·0020	·0020
42	·0016	·0016	—	—	·0035	·0030
47	·0025	·0025	—	—	·0070	·0080
52	·0036	·0036	—	—	·0142	·0140
54	·0031	·0041	—	—	·5000	·0190
55	·0035	·0043	—	—	·4000	·0220
56	·0037	·0045	—	—	·4000	·0240
57	·0039	·0048	—	—	·4000	·0260
58	·0041	·0051	—	—	·4000	·0280
59	·0021	·0040	—	—	·9979	·5000
60	—	·0045	—	—	—	·4000
61	—	·0047	—	—	—	·4000
62	—	·0049	—	—	—	·4000
63	—	·0052	—	—	—	·4000
64	—	·0034	—	—	—	·9966

Notes:

(i) The groups are composed as follows:—

Group G—nurses, physiotherapists, etc.

“ H—mental health officers (non-manual)

“ J—mental health officers (manual)

“ K—officers (administrative, executive, clerical, and hospital medical and technical officers)

“ L—manual workers (not mental health officers)

(ii) Retirement is assumed to be on grounds of age at age 55 and over for Groups G, H and J, and at age 60 and over for Groups K and L, and to be on grounds of ill-health under those ages.

(iii) The relatively small Group M, medical practitioners, and Group N, dental practitioners, were included with male practitioners for the purpose of the investigation.

(iv) The probabilities at the terminal ages relate to only half a year.

APPENDIX IV (a)

MEN

Rates of progression of pensionable remuneration related to an index of 100 at age 25

	<i>Group A</i>	<i>Groups B and D</i>	<i>Group C</i>	<i>Group E</i>	<i>Group F</i>
<i>Age last birthday</i>	<i>Mental health officers (non-manual)</i>	<i>Manual workers (including m.h.a.)</i>	<i>Officers (administrative, executive, clerical and hospital medical and technical officers)</i>	<i>Medical practitioners</i>	<i>Dental practitioners</i>
25	100	100	100	100	100
30	124	105	138	124	122
35	143	"	165	181	145
40	158	"	183	232	156
45	172	"	196	254	151
50	184	"	205	254	136
55	195	"	212	240	115
60	"	"	216	226	99

APPENDIX IV (b)

WOMEN

Rates of progression of pensionable remuneration related to an index of 100 at age 20

	<i>Group G</i>	<i>Group H</i>	<i>Groups J and L</i>	<i>Group K</i>
<i>Age last birthday</i>	<i>Nurses, physiotherapists etc.</i>	<i>Mental health officers (non-manual)</i>	<i>Manual workers (including m.h.a.)</i>	<i>Officers (administrative, executive, clerical and hospital medical and technical officers)</i>
20	100	100	100	100
25	125	121	105	137
30	148	138	110	165
35	169	155	"	187
40	187	169	"	202
45	203	181	"	213
50	215	192	"	220
55	221	200	"	224
60	"	"	"	227

APPENDIX V

Valuation balance sheet (sub-divided) as at 31st March, 1955

(This statement relates only to benefits and contributions payable under the Regulations)

Amounts in £000's

	Central Scheme	Statutory options (Reg. 43)	Non-Statutory options (Reg. 45)	Practitioners' insurance policies (Reg. 76)	Supplementary payments (Reg. 46)	Total
Liabilities						
Present value of existing pensions (including widows' and dependants' pensions)	17,318	6,844	—	—	1,874	26,036
Contingent pensions to widows of existing pensioners	952	—	—	—	—	952
Present value of future awards of pensions to members (including injury allowances)	342,780	45,684	1,131	—	—	389,595
Present value of lump sum payments (including short service gratuities)	50,378	1,496	—	—	—	51,874
Present value of death gratuities	8,308	376	—	—	—	8,684
Present value of widows' pensions	46,340	136	—	—	—	46,476
Present value of refunds of contributions etc.	10,298	8	—	—	—	10,306
Present value of contributory payments to other superannuation arrangements	—	—	9,687	2,436	—	12,123
Present value of outstanding expenditure	681	105	4	—	20	810
	477,055	54,649	10,822	2,436	1,894	546,856
Assets						
Present value of future contributions by members	121,905	2,702	3,237	—	—	127,844
Present value of future contributions by employing authorities	163,963	5,849	5,368	—	—	175,180
Present value of outstanding payments in respect of transfer values	11,091	2,899	—	—	—	13,990
Present value of other outstanding revenue	724	3	—	—	—	727
Balances in the accounts at 31st March, 1955	133,372	19,017	(Dr.) 465	(Dr.) 1,712	(Dr.) 579	149,633
Deficiencies	46,000	24,179	2,682	4,148	2,473	79,482
	477,055	54,649	10,822	2,436	1,894	546,856

Note: There is an unascertainable liability in respect of 3,686 members still in employment whose rights to supplementary payments have been admitted but for whom the amounts cannot be determined until their retirement.